

Helotes Economic Development Corporation

*Preliminary Engineering Study for Proposed
Water and Sanitary Sewer Lines*

April 2008

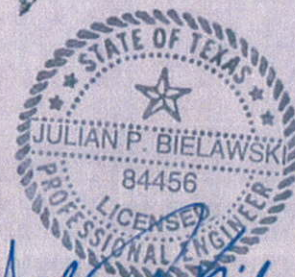
PREPARED FOR



CULTIVATING COUNTRY

12951 Bandera Road
Helotes, Texas 78023

SUBMITTED BY



Julian P. Bielawski
4-10-08

8918 TESORO DRIVE, SUITE 401 – SAN ANTONIO, TEXAS 78217
(210) 822-2232 – (210) 822-4032

E070192

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HELOTES ECONOMIC DEVELOPMENT CORPORATION

PRELIMINARY ENGINEERING STUDY FOR PROPOSED
WATER AND SANITARY SEWER LINES

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INTRODUCTION

This report represents the results of the feasibility study for Proposed Water and Sanitary Sewer Lines along the North side of Bandera Road (S.H. 16) from Scenic Loop to Cedar Trail (approx. 11,200 feet).

Authorization

The work for this project was performed in accord with a contract for services dated November 28, 2007, between LNV Engineering and the Helotes Economic Development Corporation.

Purpose and Scope

The purpose of this feasibility study was to provide the Helotes Economic Development Corporation the possibility of providing both water and sanitary sewer lines along the North side of Bandera Road (S.H. 16) from Scenic Loop to Cedar Trail.

General

The Engineer warrants that the findings, recommendations and professional advice contained herein have been presented after being prepared in accordance with generally accepted professional engineering practices.

This report has been prepared for the exclusive use of the Helotes Economic Development Corporation.

EVALUATION

Existing Utilities

The existing utilities located along the North side of Bandera Road consist of gas, electric, water and sanitary sewer. **See Appendix A for Utility Base Maps.**

AT&T has a buried telephone cable along the North side of Bandera Road from F.M. 1560 to Diamond K Trail. There is also a buried telephone cable along the North side of Bandera Road from Leslie Road to Cedar Trail. A buried conduit system is located at the northwest corner of the intersection of Bandera Road and Scenic Loop.

CPS Energy has a buried gas line along the North side of Bandera Road from Cedar Trail to the north of the intersection of Bandera Road and Circle A Trail.

Grey Forest has a buried gas line along the North side of Bandera Road from Diamond K Trail to F.M. 1560 and along the North side of Bandera Road adjacent to Helotes Park Estates near Laurel Leaf Drive.

San Antonio Water System (SAWS) has a 15-inch sanitary sewer main along the North side of Bandera Rd from Circle A Trail to Hausman Road (F.M. 1560). There is an 8-inch sanitary sewer main at the intersection of Bandera Road and Cedar Trail which extends west along the North side of Bandera Road to Bandera Oaks Car Wash.

San Antonio Water System (SAWS) has a 16-inch water main at the intersection of Bandera Road and Hausman Road which extends west to the existing pump station located just east of Diamond K Trail. There is also a 16-inch water main located at the intersection of Bandera Road and Cedar Trail which extends west along the North side of Bandera Road to Bandera Oaks Car Wash.

Coordination with TxDOT

Currently, the right-of-way (R.O.W.) along Bandera Road is a variable width but in general there is approximately 180 feet of R.O.W. throughout the project limits. TxDOT has no future plans to widen Bandera Road within the project limits. TxDOT would prefer to have the proposed water and sanitary sewer lines within dedicated easements on individual parcels; however, would permit construction if this was not obtainable.

TxDOT requires all utility mains to be placed at a minimum distance of ten (10') feet from the edge of pavement. There are some areas along the North side of Bandera Road that has only 15 to 17 feet from the edge of pavement to the face of the rock outcropping. Due to the close proximity of the rock outcropping, it will be necessary to cut back into the rock for additional distance to accommodate the proposed water and sanitary sewer lines. A variance could be requested to place the service lines within the minimum 10' distance from the edge of pavement; however, these requests are rarely approved.

Easements may be necessary along the North Side of Bandera Road from Circle A Trail to Cedar Trail. Currently, there are several utility mains in this area and with the recent construction of widening Bandera Road; there is very little area for additional services.

All water and sewer main crossings at any paved driveway, State Highway or City streets must be bored due to state regulations and city ordinances.

Coordination with SAWS

Currently, there are no CIP projects or any other projects proposed to be built by SAWS to provide water and/or wastewater services to the City of Helotes along Bandera Road, between Scenic Loop and Cedar Trail.

There will be no SAWS participation and no credits for the construction of water mains/facilities and/or wastewater collection systems required to serve the properties within the project limits.

To actually provide service to any of the properties within the project limits, the developer (The City of Helotes/property owners or developers developing the properties) will be required to enter into a Utility Service Agreement (USA) with SAWS and complete all the necessary requirements.

The City of Helotes/property owners or developers developing the properties will be responsible for all costs associated with the design, construction and installations of all water and wastewater facilities/mains/systems required to serve the properties within the City of Helotes.

SAWS recently completed a capacity analysis of the Iron Horse Lift Station. See **Appendix B for SAWS Memo**. This information is critical to the City's future wastewater planning as the gravity mains must carry the flows (current and ultimate) being pumped by the Iron Horse Lift Station and any other flows introduced by secondary collector lines and laterals downgradient of the start of the 15-inch gravity line at Bandera Road and Circle A Trail.

Overall committed and uncommitted flows identified by SAWS to be served by the Iron Horse Lift Station totals 3.781 M.G.D., (2.626 g.p.m.). This cyclic pumped flow is directed to 15-inch and 18-inch gravity mains which also serve other downgradient sections of the City, not served by the lift station. Additional flows are being directed to 15 and 18 inch downgradient gravity mains along Highway 16, at Leslie Road within Cedar Point and also Cedar Trail. Gravity mains should transport iron horse pumping rates and all additional flows to the gravity mains. Measuring and evaluating the current flows within these mains, and forecasting flows from proposed/approved developments outside the lift station drainage area, and determining the actual remaining capacity is beyond the scope of this study. An elementary school is planned to the south side of Highway 16 to the west of Leslie Road and commercial development is planned to the east of Leslie Road to the south of Highway 16.

The proposed development will comprise of approximately 580 Equivalent Dwelling Units (EDUs) using a 4 EDU per acre land use, which would produce an additional wet weather wastewater flow of 0.3917 M.G.D. or 272 G.P.M.

Most proposed developments listed in the SAWS Capacity Analysis of the Iron Horse Lift Station of February 19, 2008 have no reserved or guaranteed capacity.

Certain sections of the 15-inch and 18-inch gravity sewer mains downgradient of the future connection point of this proposed development will not adequately transport the ultimate flow to be delivered by the Iron Horse Lift Station alone.

Existing Lots

Currently, based on the Bexar County Records and the City of Helotes, there are approximately ten (10) platted properties and thirty (30) non-platted properties along the North side of Bandera Road from Scenic Loop to Cedar Trail.

RECOMMENDATIONS

Proposed Water Line

Preliminary calculations estimate that the proposed water line will be a 12-inch water main which is based on the projected water demand (ultimate + fire flow) and land use. **See Appendix C for Water Demands.** According to the SAWS water master plan, the vast majority of the project limits are within Zone 8 which has an elevation range from 920 ft to 1040 ft.

The proposed 12-inch water main will be located along the North side of Bandera Road which will connect to an existing 24-inch water main at the intersection of Bandera Road and Scenic Loop. The water main will extend down to the existing 16-inch water main located just past the intersection of Diamond K Trail and Bandera Road. **See Appendix D for Preliminary Schematic Layout for Proposed Water Line.**

The other portion of the proposed 12-inch water main will be located along the North side of Bandera Road between Hausman Road and Cedar Trail. The 12-inch water main will connect to the existing 16-inch water main at Bandera Oaks Car Wash and extend to the intersection of Bandera Road and Hausman Road.

Proposed Sanitary Sewer Line

According to the Bexar County 2 FT Contour Map, a gravity sanitary sewer main will not be achievable from Scenic Loop to 13234 Bandera Road. Preliminary assessment indicates that a lift station and force main will be needed from Helotes Creek to 13234 Bandera Road in order to transfer the sewage in an upgradient direction. This will require acquisition of land for the placement of the lift station and SAWS required truck access. Once the sewage has been lifted to 13234 Bandera Road, an 8-inch gravity sanitary sewer main shall be installed from 13234 Bandera Rd to Circle A Trail. The proposed 8-inch gravity sanitary sewer main will connect into the existing 15-inch sanitary sewer main at the intersection of Bandera Road and Circle A Trail, if capacity exists.

The remaining capacity within the collection system downgradient of the intersection of Bandera Road and Circle A Trail are not known at this time. LNV Engineering has provided SAWS with preliminary projected wastewater demands so that they can evaluate the existing sewer system to determine if this project could possibly tie-in to the existing 15-inch sanitary sewer main at Circle A Trail. **See Appendix C for Sewer**

Demands. The existing sanitary sewer system will need to be modeled utilizing current flows to verify if the current sewer main would be able to handle the additional flows from the developments along Bandera Road. If the capacity of the existing sewer system is not adequate to handle the additional flows, then a parallel sewer system or replacement of the existing system will be required. This evaluation was requested of SAWS in January 2008 and has yet to be received.

The other portion of the proposed 8-inch gravity sanitary sewer main will be located along the North side of Bandera Road between Hausman Road and Cedar Trail. The 8-inch gravity sanitary sewer main will connect to the existing 8-inch gravity sanitary sewer main at Bandera Oaks Car Wash and extend to the intersection of Bandera Road and Hausman Road. **See Appendix E for Preliminary Schematic Layout for Proposed Sanitary Sewer Line.**

The proposed alignments for both the water and sanitary sewer mains that will be crossing Helotes Creek can either be trenched or bored. If Helotes Creek is to be trenched then a 404 permit will be required to be submitted to the Army Corp of Engineers for approval.

Preliminary Estimated Costs

Using the information gathered from the utility base maps, information provided by SAWS and SAWS design guidelines, a preliminary cost estimate has been determined. Estimated costs were developed using the current San Antonio Water System (SAWS) Average Unit Price List for Water and Sanitary Sewer Governmental Division Projects. The estimated costs are total budget costs and include twenty percent (20%) for construction contingencies and ten percent (10%) for engineering design services. The estimated costs do not include land acquisition or easements.

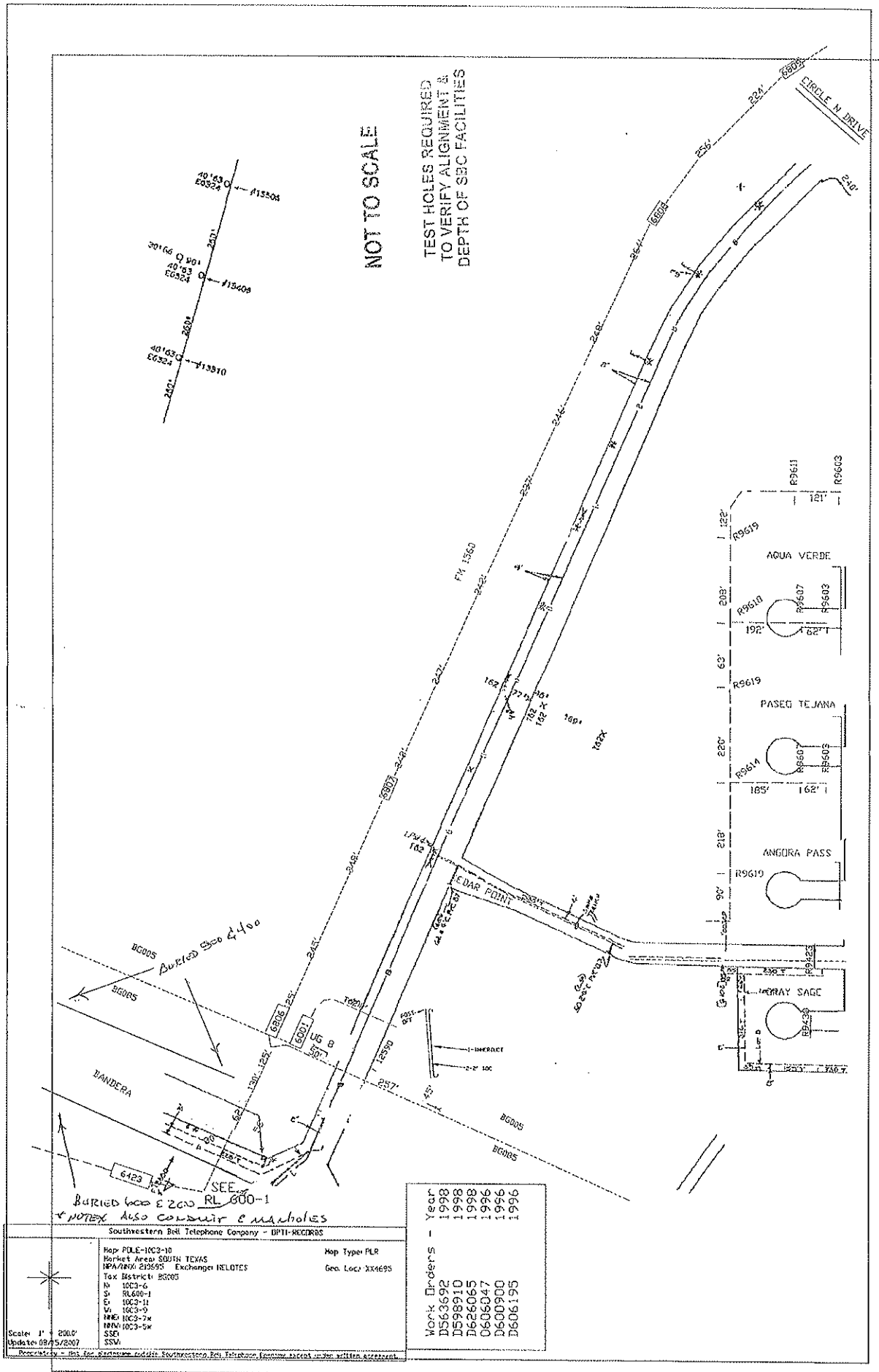
The preliminary estimated budgeted cost for the construction of the proposed water and sanitary sewer lines are \$2,949,810.50. **See Appendix F for Preliminary Engineering Estimate.** An inflation factor has not been included in this report and should be considered if the project is not completed within the next year. In addition to the construction estimate, the SAWS impact fees for both the water and sanitary sewer lines will be \$3,192,200.00 based on a future land use of 4 EDU's per acre. **See Appendix C for SAWS Impact Fees.**

SUMMARY

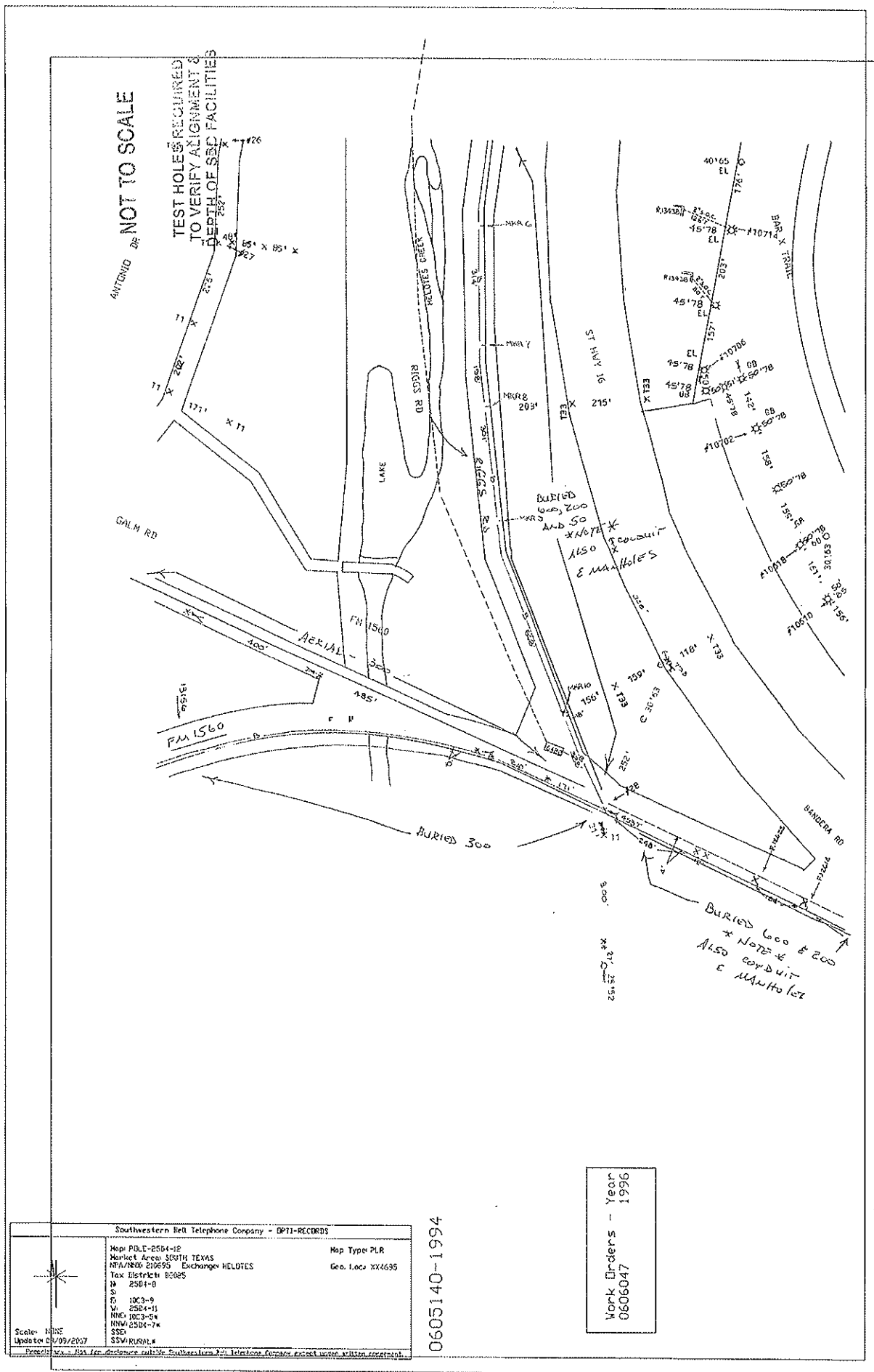
Based on the study, it is feasible to install both water and sanitary sewer lines along the North side of Bandera Road from Scenic Loop to Cedar Trail. However, there are many unknowns and concerns with the capacity of the downgradient sanitary sewer system from Circle A Trail to Hausman Road and at Cedar Trail. This study did not include the analysis of the existing sanitary sewer system from Circle A Trail to Hausman Road.

LVN Engineering recommends that a Phase A Study be conducted for water and wastewater systems in conjunction with SAWS to analyze current conditions, capacities, demands and determine the remaining capacities and recommendations for improvements of the existing system. This report would include flow monitoring, modeling (water and wastewater), alternatives for future expansion, recommendations and cost estimates.

TEST HOLES REQUIRED
TO VERIFY ALIGNMENT &
DEPTH OF SRC FACILITIES



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Southwestern Bell Telephone Company - DP11-RECORDS		
Map POLE-2504-12	Map Type: PLR	
Market Area: SOUTH TEXAS	Geo. Loc: XX6695	
NTA/NDG 210695	Exchange: RELATES	
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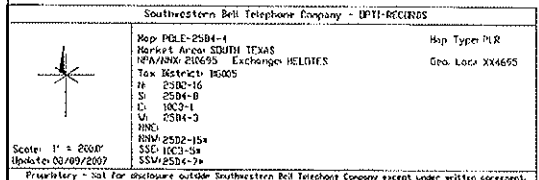
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Precedence: 1st for locations outside Southwest Bell Telephone Company except where noted in parentheses.

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Work Orders - Year 1996
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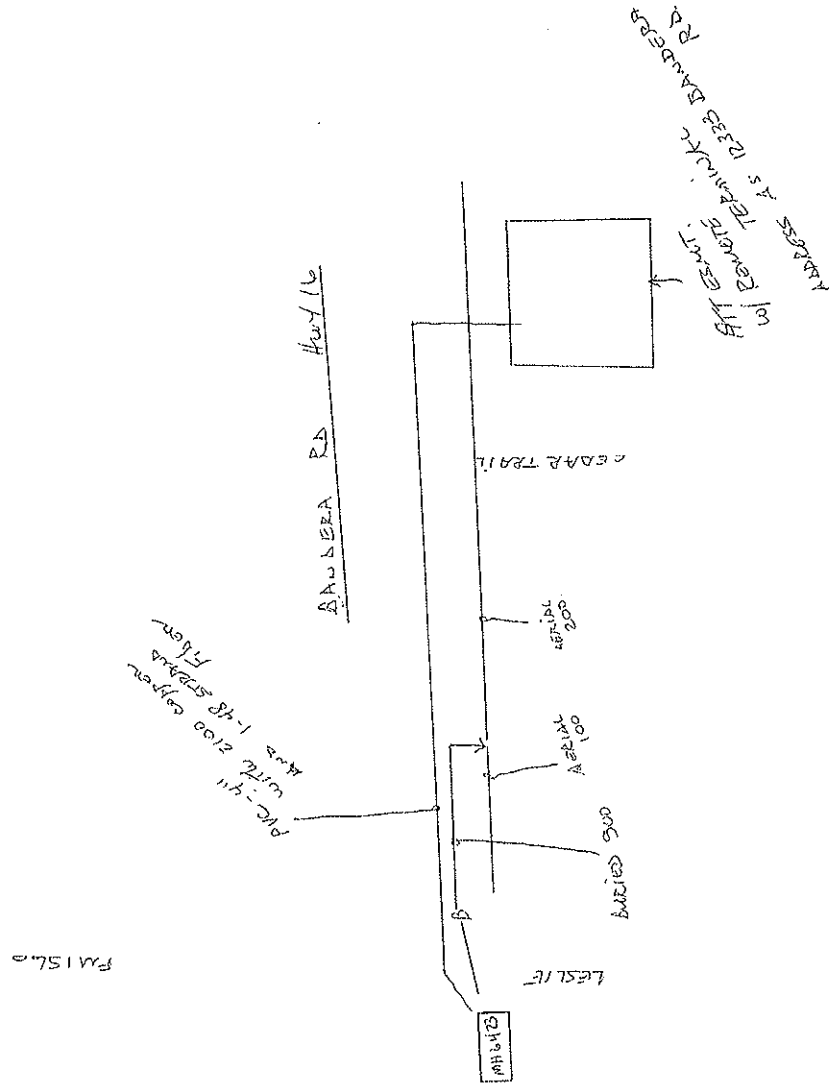
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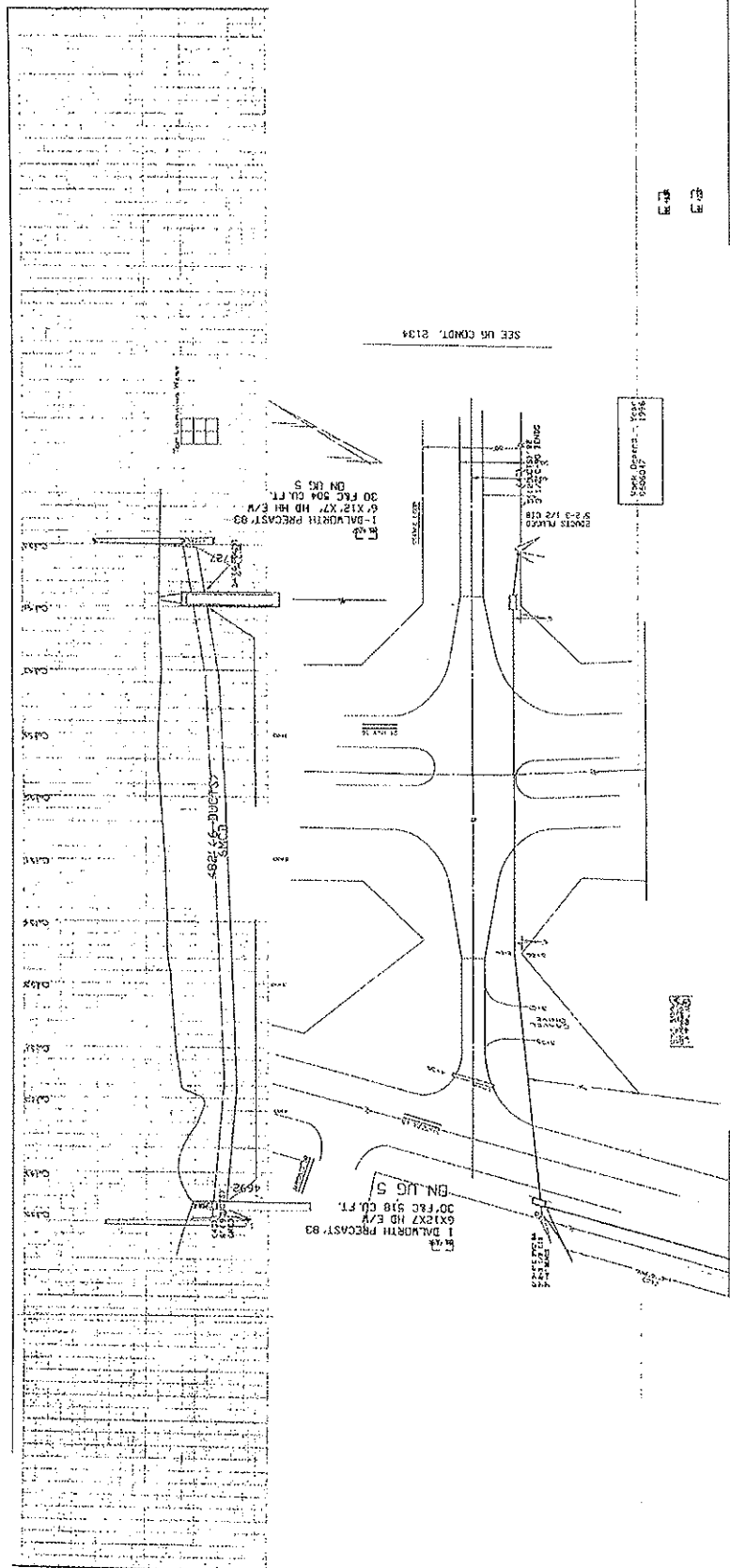
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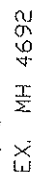
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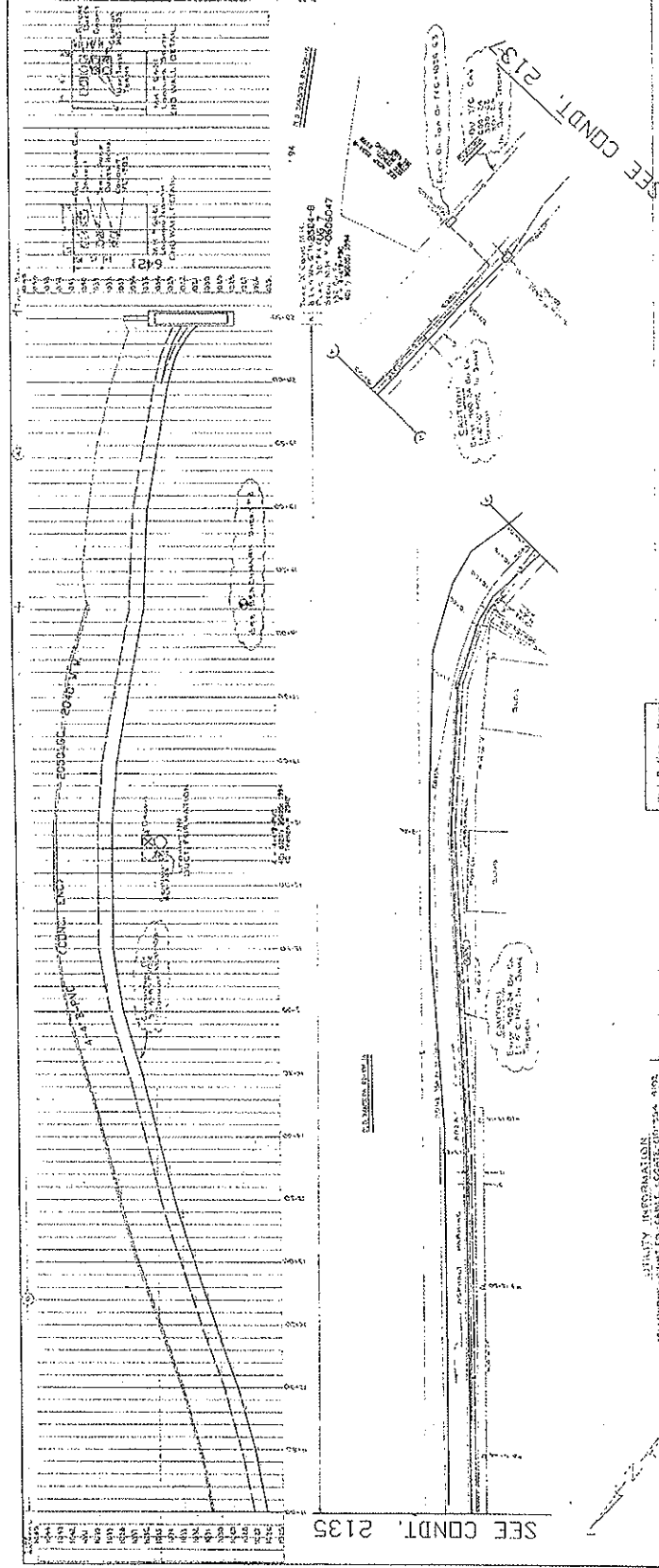


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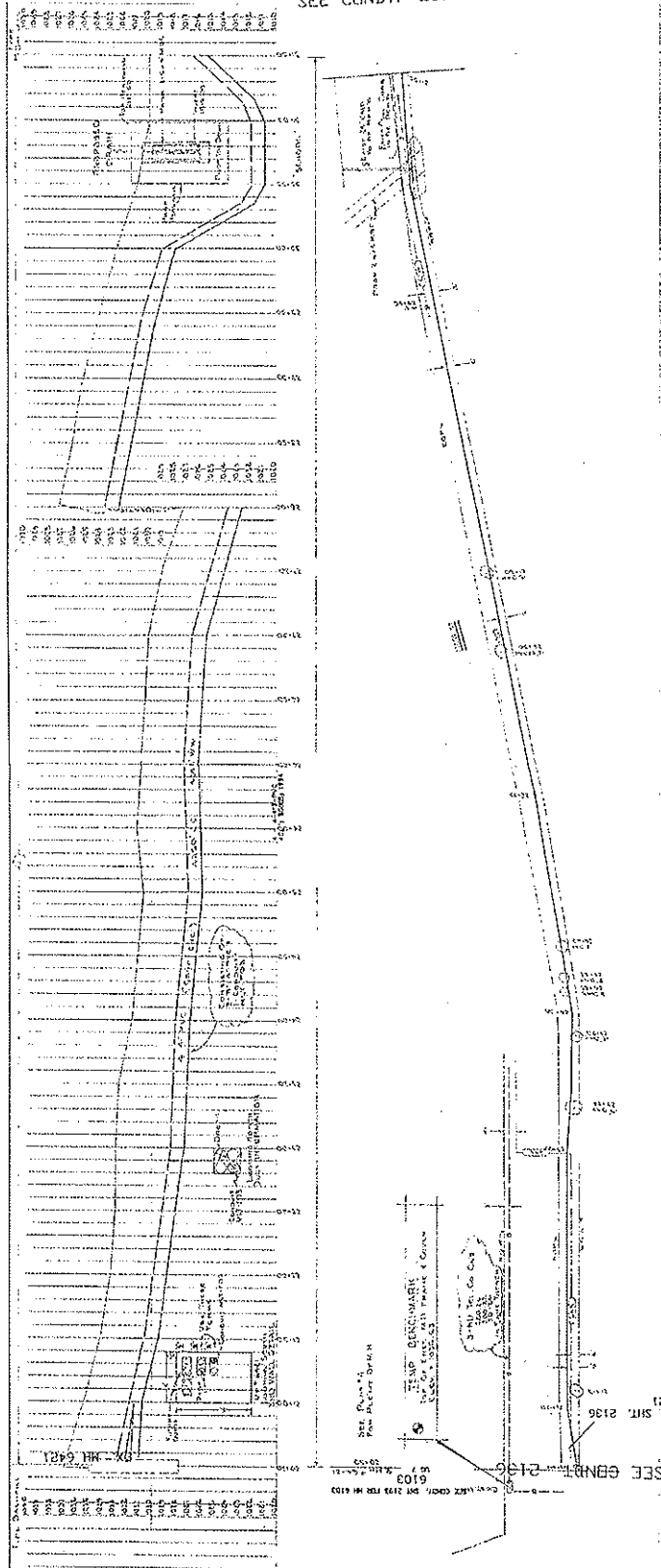
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TO VERIFY ALIGNMENT &
DEPTH OF SBC FACILITIES

SEE CONDT. 2171



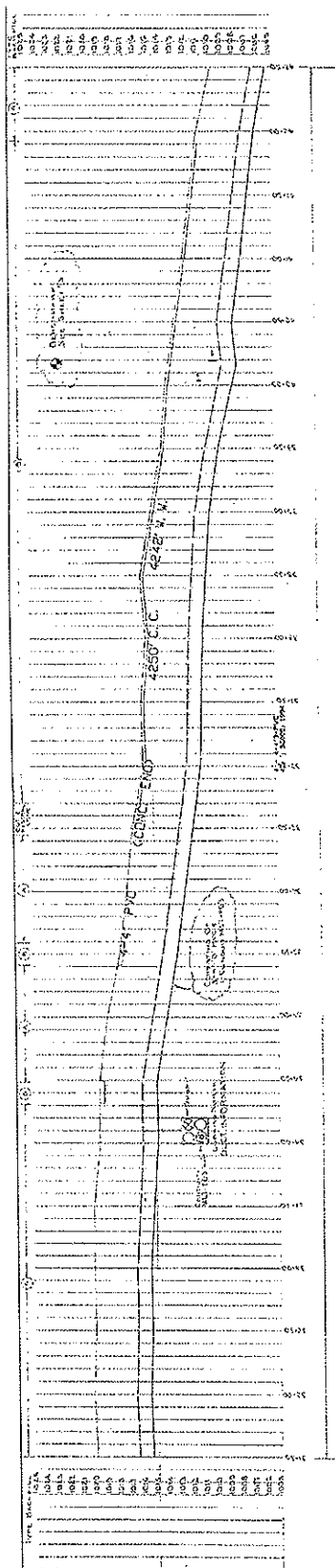
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EX. MH 6421

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FOR MH 6421

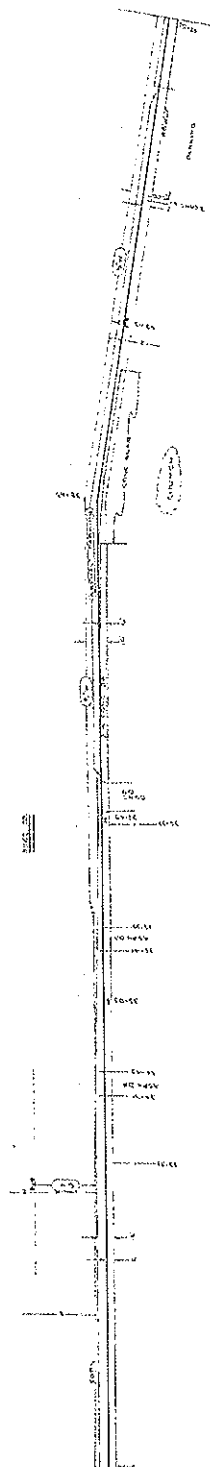
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TEST HOLES REQUIRED
TO VERIFY ALIGNMENT &
DEPTH OF SBC FACILITIES



SEE CONDT. 2137

SEE CONDT. 2172



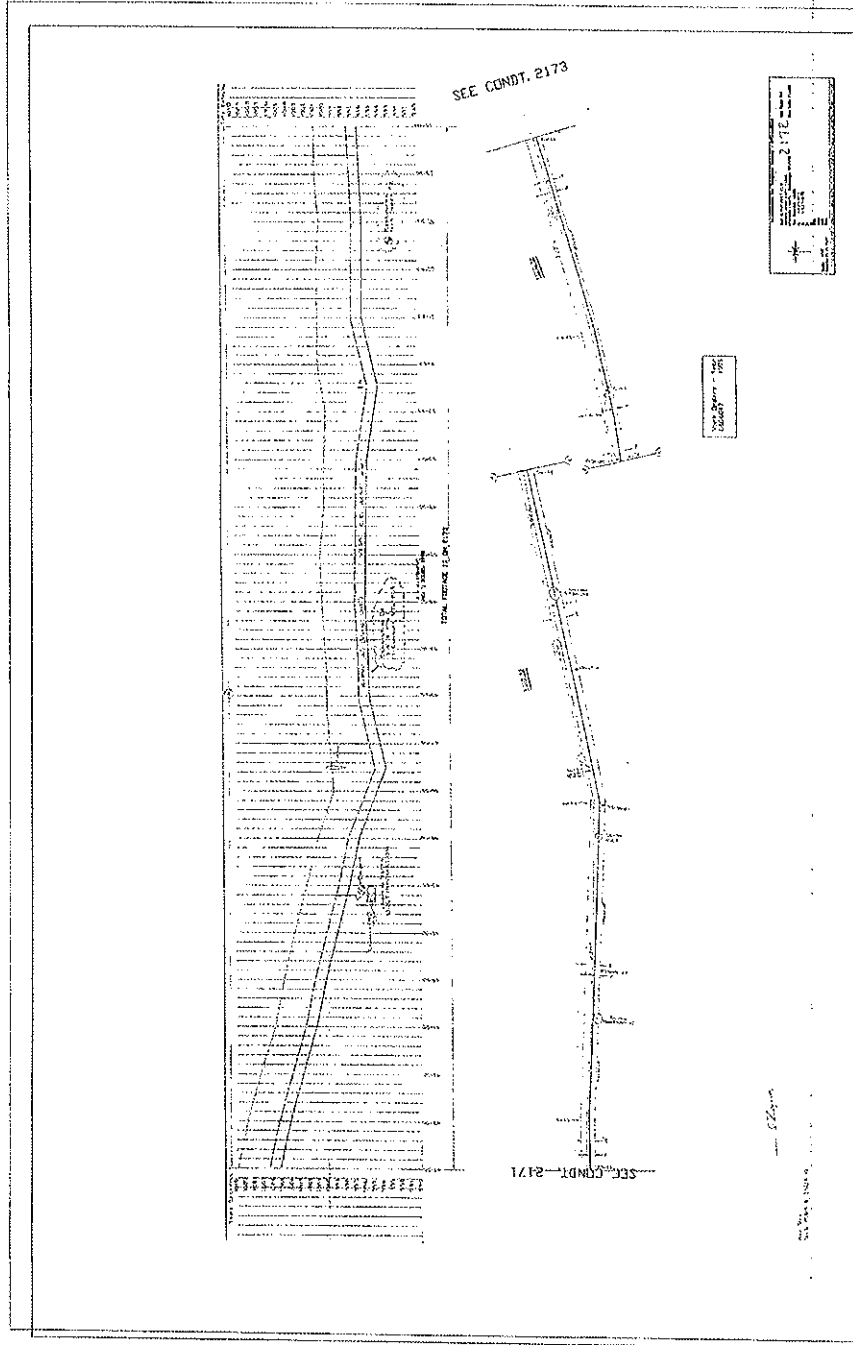
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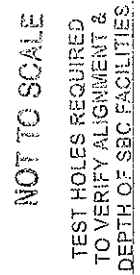
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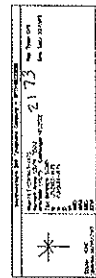




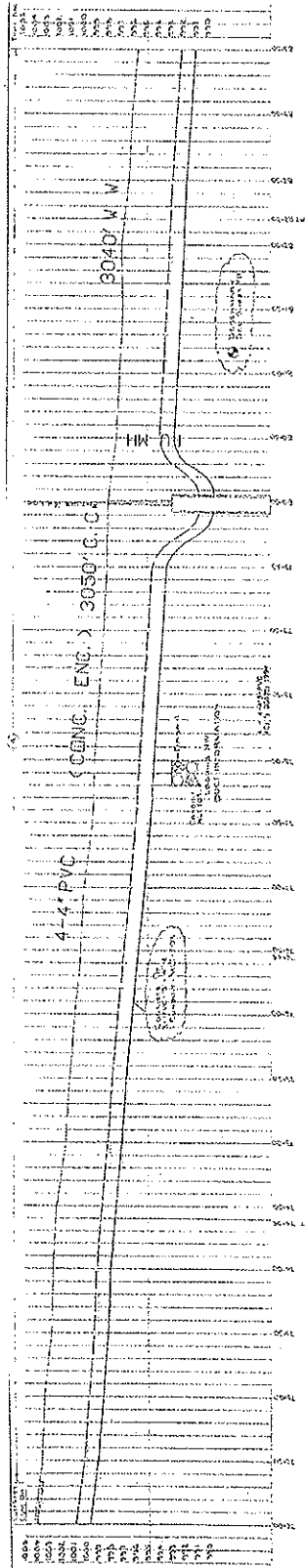
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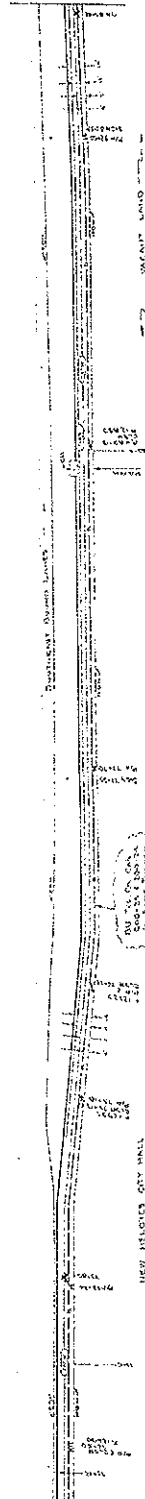
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SEE CONDUIT 2176



SEE CONDUIT 2174



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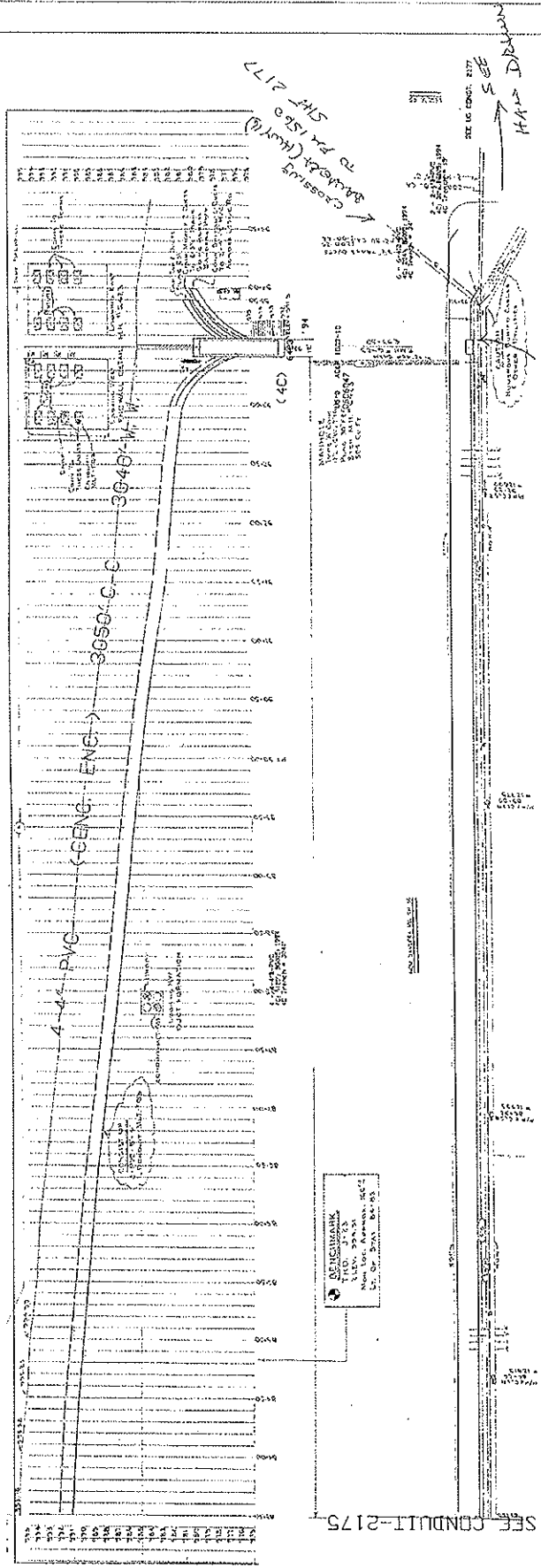
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TO VERIFY ALIGNMENT &
DEPTH OF SBC FACILITIES

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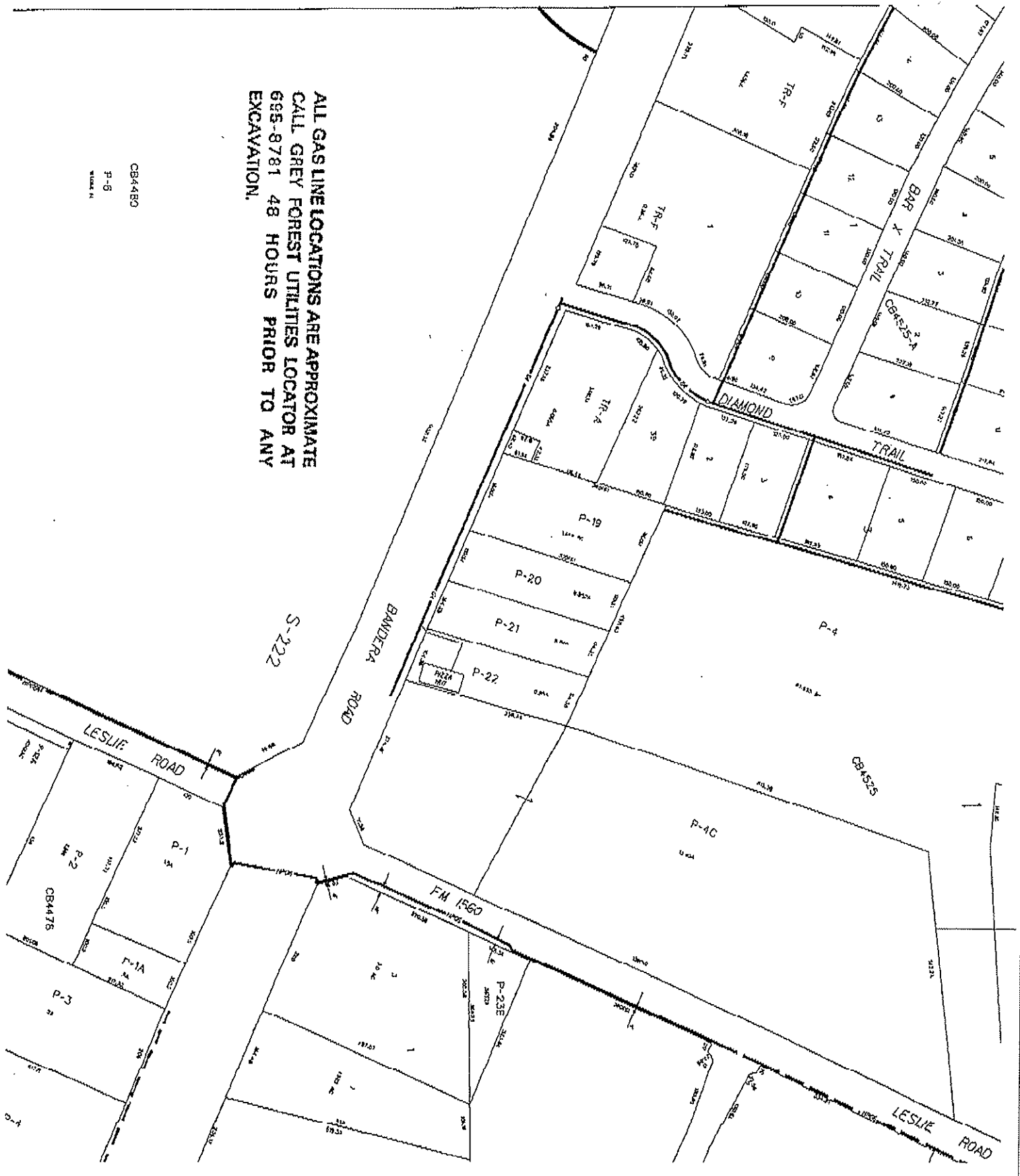
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NATIONAL HIGHWAY
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CO., INC.

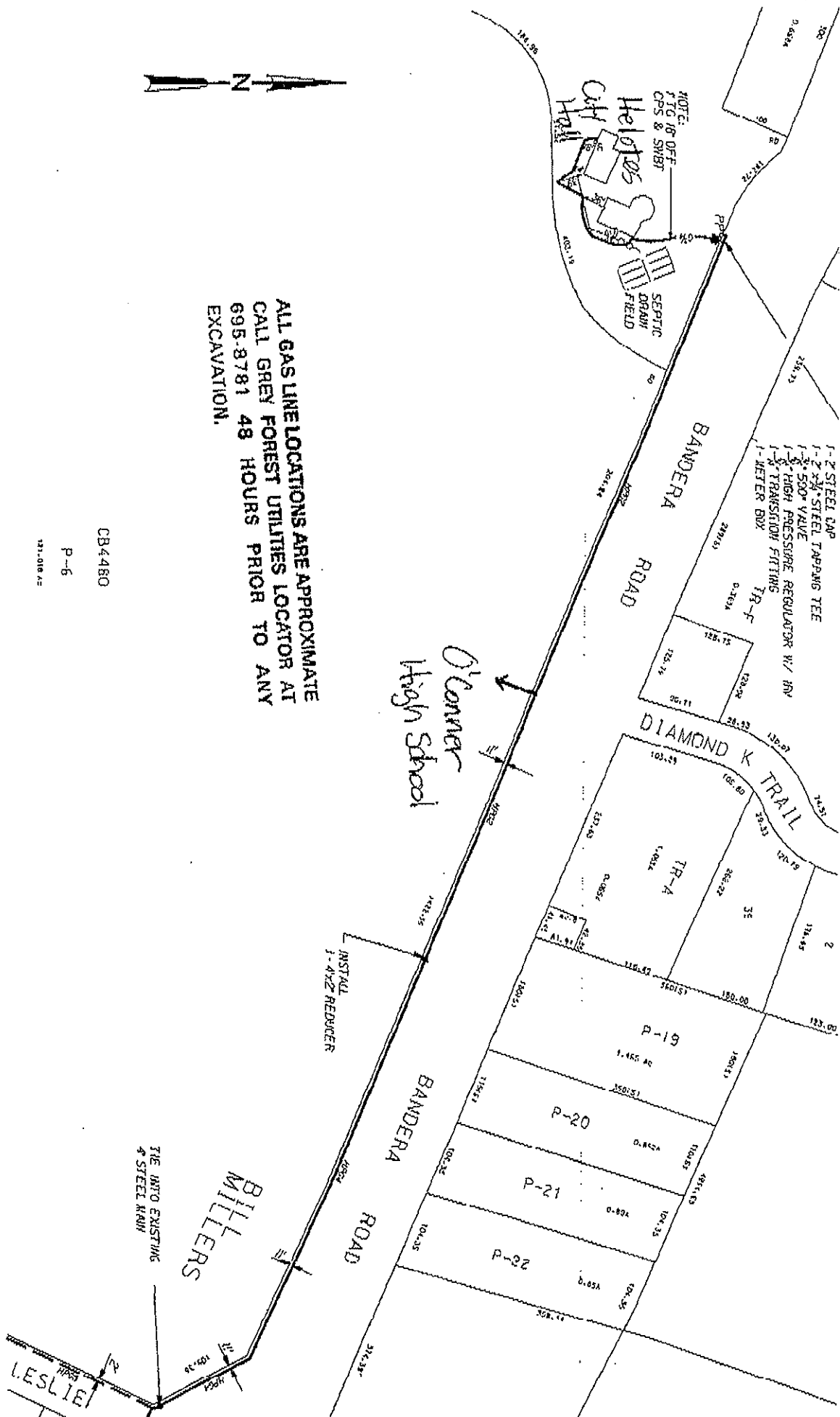
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WILSON, TX





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EXCAVATION.

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SCENIC LOOP RD

OLD DANIELE RD

FLOORE DRIVE SEE SHEET 12A4

GEU HQ

RIGGS RD

DANIELE RD

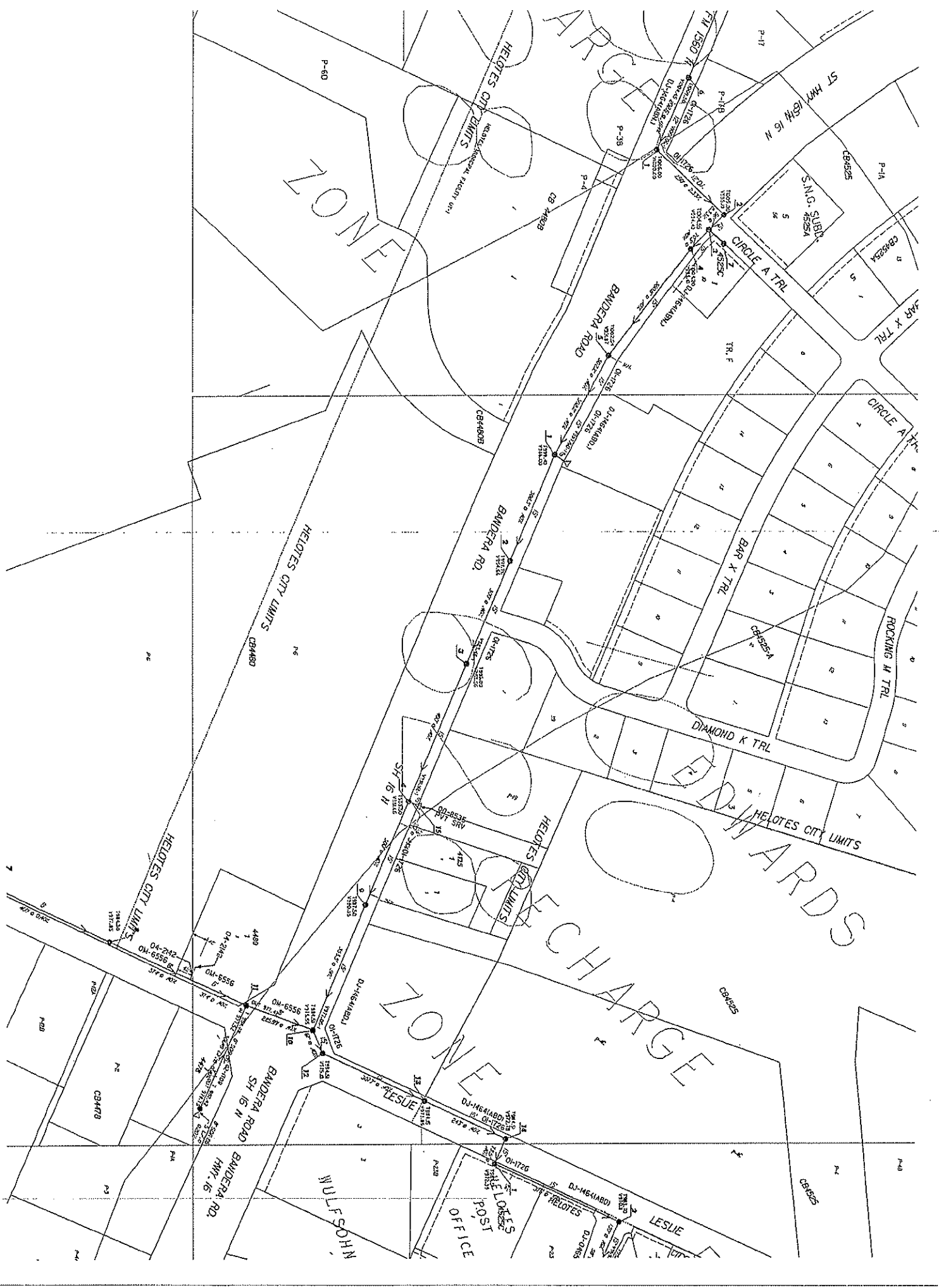
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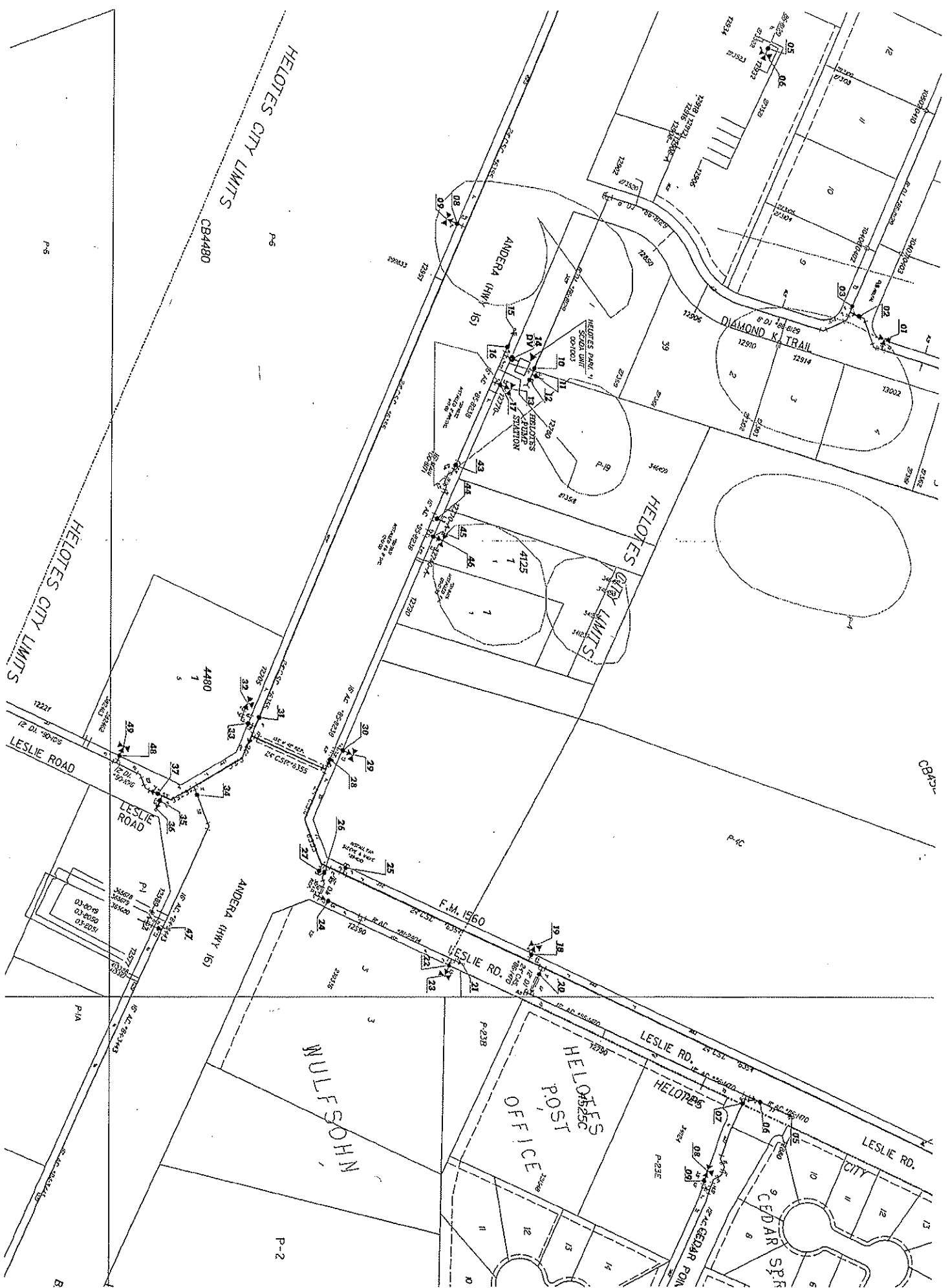
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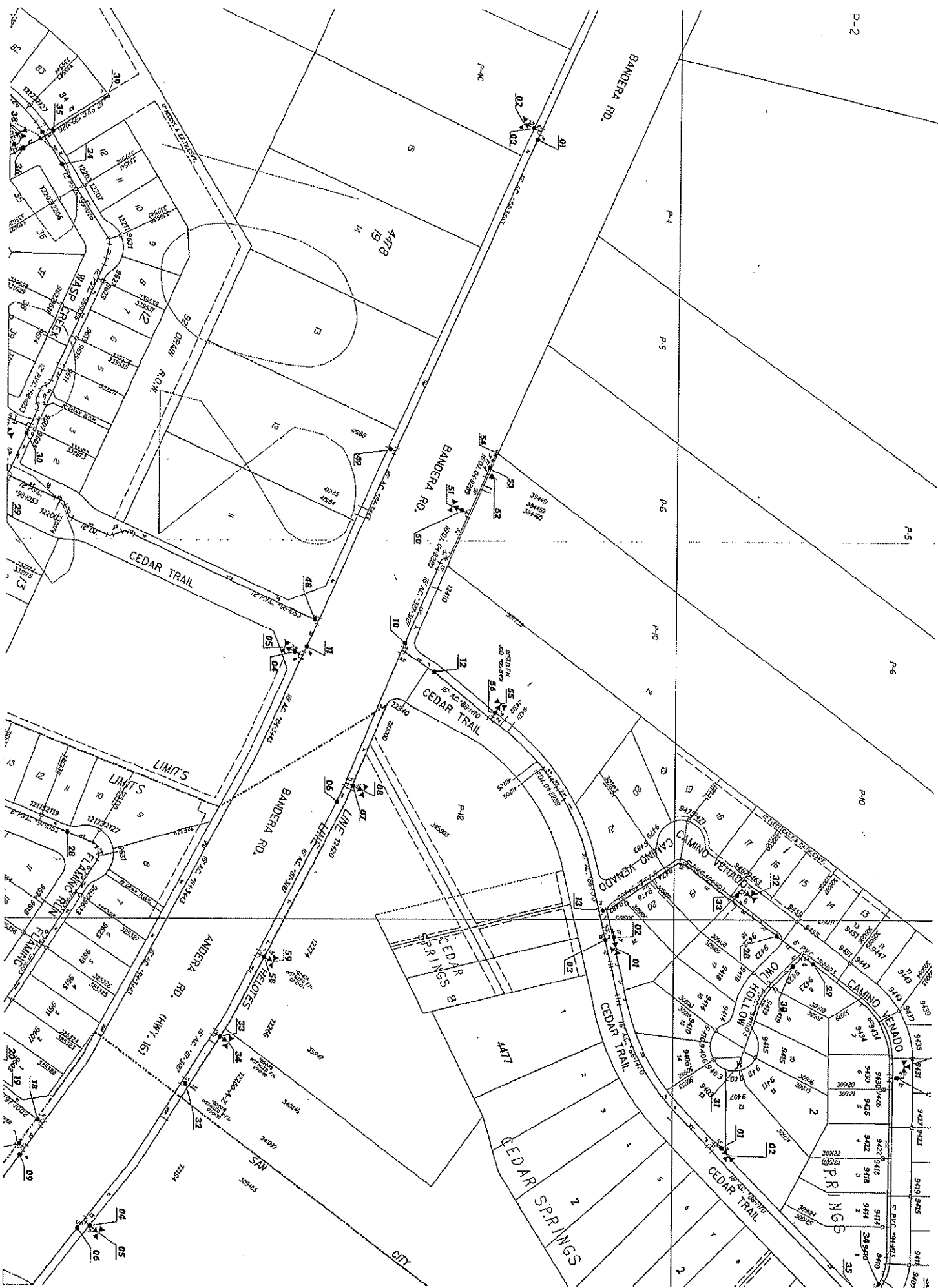
LEGEND

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REDUCER	---
TRANSITION FITTING	---









**FINAL**

San Antonio Water System

Memo

To: Patrick O'Connor, Graduate Engineer I at Development Engineering; and Amy McGovern, EIT, Graduate Engineer I at Development Engineering

From: Santa G. Rivas, Planner III, Wastewater Master Planning

CC: Kat Price, P.E., Manager-Water/Wastewater Master Planning; Bobby Mengden, P.E., Manager-Development Engineering Division (DED); Tracey Lehmann, P.E., at Wastewater Master Planning; and Samuel Johnson, Jr. E.I.T., Graduate Engineer II at Wastewater Master Planning

Re: Capacity Analysis of the Iron Horse Lift Station Area.

February 19, 2008

An analysis was conducted using available/existing data from the SAWS active Sewer Service Contracts (SS Contracts), Utility Service Agreements (USAs), and design data related to the existing infrastructure. The data was used to compare the total capacity that SAWS has under contract/agreement versus the design capacity of Iron Horse Lift Station #233 (See attached table with list of *Active USAs and SS Contracts*).

Area of Study:

The area of study included approximately 2,673 Acres within the Culebra Creek Watershed, which is part of the SAWS West Sewershed. The 2,673 acres will ultimately connect and discharge a total of 4,965 EDUs, which will ultimately place a total demand of 3.781 MGD (3,781,091 GPD or 4,965 EDUs, based on peak wet weather flows) on the Iron Horse Regional Lift Station/Force Main System (see table below).

The 2,673-acre area was broken up into six (6) smaller sub-catchment areas (see attached exhibit) to create six point loads, as shown on the summary table below. This was done to determine the contributing flows to each point load from each of the active USAs and/or Sewer Contracts within each sub-catchment area. Subsequently, the contributing flows were then cumulatively added along the six point loads all the way down to Iron Horse Lift Station #233 (see table below).

Summary of Sub-Catchment Areas (based on active USAs and Contracts)

Sub-Catchment Area	Acres	Sewer EDUs	Peak Dry Weather Flows (GPD)	Peak Dry Weather Flows (MGD)	I & I (300 GPD/Ac.)	I & I (300 MGD/Ac.)	Peak Wet Weather Flows with I&I (GPD)	Peak Wet Weather Flows with I&I (MGD)
1	875	2,333	1,399,800	1.400	262,570	0.263	1,662,370	1.662
2	607	726	435,600	0.436	182,004	0.182	617,604	0.618
3	636	201	120,600	0.121	190,875	0.191	311,475	0.311
4	493	1,634	980,340	0.980	147,929	0.148	1,128,269	1.128
5	33	46	27,600	0.028	10,040	0.010	37,640	0.038
6	28	26	15,354	0.015	8,380	0.008	23,734	0.024
Totals	2,673	4,965	2,979,294	2.979	801,797	0.802	3,781,091	3.781

Summary Totals from active USAs and/or Sewer Contracts within each sub-catchment area, as of February 12, 2008.

Design Capacity of Iron Horse Lift Station #233:

The design capacity of the Iron Horse Lift Station #233 is based on two submersible pumps. The pumps have a current "pump test rate" of 1,043 gpm and 1,017 gpm, respectively. Based on current practice here at SAWS, it is assumed that the pump with the largest "pump test rate" shall serve as the back up pump; and that the pump with the smaller "pump test rate" is being used to calculate the total capacity of the lift station. The maximum capacity at Iron Horse Lift Station #233 is being based on 1,017 gpm, which equates to only 1.464 MGD (1,464,480 GPD) of sewer capacity, which equates to 2,169.6 EDUs (based of peak wet weather flows). Note: Source of *Pump Test Rates* is based on SAWS Assessment and Design of Sewer Lift Station Improvements, prepared for SAWS by PBS&J, which was completed on February 21, 2005.

Reserved Capacity:

A total of 600 EDUs of capacity have been reserved in the Iron Horse Regional Lift Station/Force Main System. 400 for the Iron Horse Canyon development (see note below) and up to 200 EDUs for the San Antonio Ranch area, based on the following:

- *SAWS will reserve capacity in infrastructure constructed by the developer up to the number of EDU's described in this USA. Capacity is guaranteed only after the developer constructs all required infrastructure and pays all applicable impact fees.*

Note: The Iron Horse Regional Lift Station was constructed by Man Development, Ltd. to serve the Iron Horse Canyon development (for a 634-acre-tract and 400 EDUs, as per a SS Service Contract, which was passed and approved through Resolution #01-204 on July 17, 2001), in which SAWS participated in the oversizing of a regional lift station/force main system in order to abandon the San Antonio Ranch Treatment Plant, as part of the San Antonio Ranch Elimination Project; and to accommodate up to 200 connections within the San Antonio Ranch area (About 166 existing dwelling were initially connected after the project).

Some other properties (with existing dwellings), within the City of Helotes (old part) were also connected into the system after the project was completed (information not found, not known how many).

Capacity Not Reserved/Not Guaranteed:

The ultimate demand from the proposed development areas currently under agreement/contract (see attached list of *Active USAs/SS Service Contracts*) will eventually exceed the design of Iron Horse Lift Station #233. Based on this capacity analysis, and assuming that all of the USAs and SS Service Contracts are built-out, lift station #233 is going to be short on capacity by approximately 2.197 MGD, which is approximately 2.5 times higher than originally designed. Therefore, *reserved and/or guaranteed capacity* for areas currently under a USA/sewer contract is not definite, based on the following:

- *if impact fees were not paid prior to the execution of the USAs/Contracts, capacity in the Iron Horse Regional Lift Station/Force Main System, and all downstream infrastructure, will only be reserved for this development in increments necessary for each area being platted, only if capacity for the platted area is available at the time of plat approval by SAWS. If capacity is not available, the Developer will be required to construct any infrastructure required to the point where capacity is available in the SAWS system. Alternately, if agreeable to SAWS and the Developer, the Developer may be able to pay applicable impact fees, and SAWS will facilitate construction of certain off-site collection and/or treatment facilities, if the facilities were included as Impact Fee Capital Improvement Projects, and provide service within 5 years of accepting impact fees.*

Guaranteed Capacity (EDUs) for each USA or Contract:

Information to determine the total number of guaranteed EDUs, if any, for each development area currently under agreement or under contract may be found at the Development Engineering Division [Such information is in regards to the paid sewer impact fees and paid number of EDUs for each of the areas currently under agreement/contract, as listed in the attached *Active USAs/SS Contracts* table and as shown on the attached map exhibit].

Active USAs and Sanitary Sewer Service Contracts

(Current as of 2/1/2008)

Project Name	Developer	Acres	Sewer EDUs	Over the ERZD	RES. No.	Approved	Expires	Over-Sizing	Status	Notes	Source (SAWS, SDE Common Files)
Iron horse Canyon	Mann Development, Ltd.	634.000	400.000	no	01-204	7/17/2001	7/17/2011			50% on sub-catchment 2 and 50% on sub-catchment 3. Reserved Capacity in the Iron Horse Regional Lift Station; subject to impact fees.	Pre-2003 SS Contracts
Los Altos Garden Homes	Bandera Station, Ltd	8.513	34.000	no	Admin App.	1/15/2002	1/15/2012			(S.A. Ranch area) approved by KN on 1/23/02. Capacity not reserved and not guaranteed.	Pre-2003 SS Contracts
San Antonio Ranch Community Sub. U-1	Rodolfo A. Munoz	5.000	1.000	no	Admin App.	1/25/2002	1/25/2012			Capacity not reserved and not guaranteed.	Pre-2003 SS Contracts
Broadway Bank Heholes	Broadway Bank	1.440	7.000	yes	Adm. Appr.	5/28/2003	5/28/2013			Capacity not reserved and not guaranteed.	Pre-2003 SS Contracts
14107 Bandera Rd. 4.136	Michael M. Young and Russell F. Young	4.136	1.000	No	N/A	4/5/2004	4/5/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
14239 Old Bandera Rd. 0.36	Doris Young	0.360	1.000	No	N/A	4/5/2004	4/5/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
First Baptist Church Heholes 3.97 Acres	First Baptist Church - Heholes	3.970	1.000	No	N/A	4/8/2004	4/8/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
13247 Bandera Rd. 2.25	Bob Statos	2.250	1.000	Yes	N/A	4/9/2004	4/9/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
13439 Bandera Rd. 3.995	Longhorn, Inc.	3.995	1.000	Yes	N/A	4/14/2004	4/14/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
Florie's Country Store 1.21 Acres	Florie's Country Store	1.210	1.000	No	N/A	4/16/2004	4/16/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
14297 Old Bandera Rd. 0.698	Robert J. Mander, Jr.	0.698	1.000	No	N/A	4/16/2004	4/16/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
14436 Old Bandera Rd. 0.914	BBQ Inc.	0.914	1.000	No	N/A	4/19/2004	4/19/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
Heholes Elementary 4.64 Acres	Northside Independent School District	4.640	6.340	Yes	N/A	4/19/2004	4/19/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
14893 Bandera Rd. 0.6	National Underwriting Services, Inc.	0.800	1.000	No	N/A	4/19/2004	4/19/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
15103 Bandera Rd. 1.5	El Chaparral Mexican Restaurant/Carlos Garcia	1.500	13.100	No	N/A	4/26/2004	4/26/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
13438 Bandera Rd. 6.743	Judy Bock	6.743	5.250	No	N/A	4/29/2004	4/29/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
15021 Bandera Rd. 0.68	Sachiko Mussey/ Bill Mussey	0.690	1.000	No	N/A	5/5/2004	5/5/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
13715 Riggs Road	Archdiocese of San Antonio	6.745	7.000	Yes	N/A	6/29/2004	6/29/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
Camp Tract	Reyes Creek 150 L.L.C.	150.000	200.000	Yes	04-054	8/3/2004	8/3/2007	No	Approved	Replaced with newer USA. Capacity not reserved and not guaranteed.	2003-2005 USAs
Shadow Canyon	Tom Dreiss	104.600	230.000	Yes	04-232	8/4/2004	8/4/2007	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
Triana Tract, 234.231	Lorenzo Triana	234.231	720.000	No	05-085	4/14/2005	4/14/2008	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
27.716-Acre Tract Heholes	Bandera Blue Eyes Interest Ltd.	27.716	50.000	No	N/A	9/21/2005	9/21/2008	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
Wai-Mart super center #3871-00 31.456	Wai-Mart Stores Texas, LP	31.456	44.000	No	05-255	9/23/2005	9/23/2008	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
Riebe Tract	Regent Communities	27.000	108.000	No	N/A	12/1/2005	12/1/2008	No	Approved	Capacity not reserved and not guaranteed.	2003-2005 USAs
Apacheia and Ranch Parkway	BP Real Estate Investments, Ltd.	24.000	63.000	No				No	Pending	Capacity not reserved and not guaranteed.	2003-2005 USAs
Shadow Canyon Remainder Tract	Post Oak Development of Texas, Inc.	208.680	440.000	Yes		1/21/2007	1/21/2010	Yes	Approved	Ranchtown No. 2 Booster Pump Needs Upgrades. Capacity not reserved and not guaranteed.	2008 USAs
Camp Tract	Capital Pacific Holdings, LLC	150.000	350.000	Yes		3/12/2007	3/12/2010	No	Approved	Replaces older existing USA. Capacity not reserved and not guaranteed.	2006 USAs
Apacheia and Ranch Parkway	BP 232 Heholes	24.000	69.000	Yes		3/28/2007	3/28/2010	No	Approved	Capacity not reserved and not guaranteed.	2008 USAs
Canyon Ranch Tract	MaBe-Canyon Ranch, Ltd.	460.990	870.000	Yes	06-325	7/23/2007	7/23/2010	Yes	Approved	Capacity not reserved and not guaranteed.	2008 USAs
Triana Residential Tract	KB Home Ltd., L.P.	198.000	700.000	No				Yes	Pending	Overlaps 2004 USA as res. portion needs more EDUs.	2008 USAs
Los Reyes Tract	Los Reyes, Inc.	30.660	83.000	Yes					Approved	Capacity not reserved and not guaranteed.	2007 USAs
Shadow Canyon 91.47 Acre Tract	Shadow Creek Canyon, Ltd.	91.470	496.000	Yes	07-104	6/11/2007	6/11/2010		Pending	Capacity not reserved and not guaranteed.	2007 USAs
Ranch at Iron Horse	Pulte Homes of Texas, LP	26.000	85.000	Yes					Pending	Capacity not reserved and not guaranteed.	2007 USAs

Iron Horse Lift Station Area Sewer Flows
(Based on Active USAs Contracts)

Sub-Catchment Group	Project Name	Developer	Acres	Sewer EDUs	Peak Dry Weather Flows (GPD)	Peak Dry Weather Flows (MGD)	I & I (300) GPD/Ac.	I & I (300) MGD/Ac.	Peak Wet Weather Flows with I&I (GPD)	Peak Wet Weather Flows with I&I (MGD)	Notes	Source (SAWS, SDE Common Files)
1	Los Altos Garden Homes	Bandera Station, Ltd	8.513	34,000	20,400,000	0.022	2,553,900	0.003	22,963,900	0.0230	(S.A. Ranch area) approved by KKN on 12/30/02. Capacity not reserved and not guaranteed.	Pre-2003 SS Contracts
1	BP 232 Heides	Apachita and Ranch Parkway	24,000	89,000	41,400,000	0.041	7,200,000	0.007	48,600,000	0.0459	Capacity not reserved and not guaranteed.	2006 USAs
1	Camp Tract	Capital Pacific Holdings, LLC	150,000	350,000	210,000,000	0.210	45,000,000	0.045	255,000,000	0.2550	Replaces older existing USA. Capacity not reserved and not guaranteed.	2006 USAs
1	Los Remanier Tract	Los Reyes, Inc.	30,660	83,000	49,800,000	0.050	9,198,000	0.009	58,998,000	0.0590	Capacity not reserved and not guaranteed.	2007 USAs
1	Canion Ranch Tract	Maße-Canyon Ranch, Ltd	460,990	870,000	522,000,000	0.522	138,297,000	0.138	660,297,000	0.6603	Capacity not reserved and not guaranteed.	2006 USAs
1	San Antonio Ranch Community Sub. U-1	Rodolfo A. Munoz	5,000	1,000	600,000	0.001	1,500,000	0.002	2,100,000	0.0021	Capacity not reserved and not guaranteed.	Pre-2003 SS Contracts
1	Shadow Canyon 91.47 Acres Tract	Shadow Creek Canyon, Ltd	91,470	495,000	287,600,000	0.288	27,441,000	0.027	325,041,000	0.3250	Capacity not reserved and not guaranteed.	2007 USAs
1	Shadow Canyon	Tom Dreiss	104,600	230,000	138,000,000	0.138	31,380,000	0.031	169,380,000	0.1694	Up to 300 EDUs (initially corrected '168 existing	2003-2005 USAs
1	*San Antonio Ranch Area (area taken over by SAWS)	SAWS		200,000	120,000,000	0.120	0.000	0.000	120,000,000	0.1200	*Reserved Capacity, subject to impact fees.	2007 USAs
			875,233	2,333,000	1,398,800,000	1.400	262,689,900	0.263	1,662,369,900	1.6624		
2	*Iron Horse Canyon (total of 634 Ac and 400 EDUs)	Mann Development, Ltd	317,000	200,000	120,000,000	0.120	95,100,000	0.095	215,100,000	0.2151	50% on sub-catchment 2 and 50% on sub-catchment 3 *Reserved Capacity, subject to impact fees.	Pre-2003 SS Contracts
2	Shadow Canyon Remainder Tract	Post Oak Development of Texas, Inc.	208,680	440,000	264,000,000	0.264	62,604,000	0.063	326,604,000	0.3266	Ranchown No. 2 Booster Pump Needs Upgrades. Capacity not reserved and not guaranteed.	2006 USAs
2	Ranch at Iron Horse	Pulte Homes of Texas, LP	81,000	86,000	51,600,000	0.052	24,300,000	0.024	75,900,000	0.0750	86 additional EDUs? Capacity not reserved and not guaranteed.	2007 USAs
			606,680	726,000	435,600,000	0.436	182,004,000	0.182	617,604,000	0.6173		
3	13247 Bandera Rd 2.25	Bob Slatos	2,250	1,000	600,000	0.001	675,000	0.001	1,275,000	0.0013	Capacity not reserved and not guaranteed.	2003-2005 USAs
3	*San Antonio Canyon (total of 634 Ac and 400 EDUs)	Mann Development, Ltd	634,000	200,000	120,000,000	0.120	190,200,000	0.190	310,200,000	0.3103	50% on sub-catchment 2 and 50% on sub-catchment 3 *Reserved Capacity, subject to impact fees.	Pre-2003 SS Contracts
			636,250	201,000	120,600,000	0.121	190,875,000	0.191	311,475,000	0.311		
4	27,716-Acre Tract Heides	Bandera Blue Eyes Interest Ltd	27,716	90,000	54,000,000	0.054	8,314,800	0.058	62,314,800	0.0623	Capacity not reserved and not guaranteed.	2003-2005 USAs
4	15103 Bandera Rd. 1.5	El Chaparral Mexican Restaurant/Carlos Garcia	1,500	13,100	7,860,000	0.008	450,000	0.000	8,310,000	0.0083	Capacity not reserved and not guaranteed.	2003-2005 USAs
4	First Baptist Church Heides. 3.97 Acres	First Baptist Church - Heides	3,970	1,800	1,080,000	0.001	1,191,000	0.001	2,271,000	0.0023	Capacity not reserved and not guaranteed. Overlapped 2004 USA. Capacity not reserved and not guaranteed.	2003-2005 USAs
4	Triana Residential Tract	KB Home Ltd., L.P.	188,000	700,000	420,000,000	0.420	59,400,000	0.059	479,400,000	0.4794	EDUs. Capacity not reserved and not guaranteed.	2006 USAs
4	Triana Tract, 234.231	Lorenzo Triana	234,231	720,000	432,000,000	0.432	70,269,300	0.070	502,269,300	0.5023	Capacity not reserved and not guaranteed.	2003-2005 USAs
4	Riebo Tract	Regent Communities	27,000	108,000	64,800,000	0.065	8,100,000	0.008	72,900,000	0.0729	Capacity not reserved and not guaranteed.	2003-2005 USAs
4	15021 Bandera Rd. 0.65	Sachiko Massey/ Bill Massey	0,650	1,000	600,000	0.001	204,000	0.000	804,000	0.0008	Capacity not reserved and not guaranteed.	2003-2005 USAs
			493,097	1,633,900	980,340,000	0.980	147,925,100	0.148	1,128,265,100	1.128		
5	Flore's Country Store 1.21 Acres	Flore's Country Store	1,210	1,000	600,000	0.001	363,000	0.000	963,000	0.0010	Capacity not reserved and not guaranteed.	2003-2005 USAs
5	14893 Bandera Rd. 0.8	National Underwriting Services, Inc.	0,800	1,000	600,000	0.001	240,000	0.000	840,000	0.0008	Capacity not reserved and not guaranteed.	2003-2005 USAs
5	Wal-Mart super center #3871-00 31.456	Wal-Mart Stores Texas, LP	31,456	44,000	26,400,000	0.026	9,436,800	0.009	35,836,800	0.0358	Capacity not reserved and not guaranteed.	2003-2005 USAs
			33,466	46,000	27,600,000	0.028	10,039,800	0.010	37,639,800	0.038		
6	13715 Rieta Road	Archdiocese of San Antonio	6,746	7,000	4,200,000	0.004	2,023,800	0.003	6,223,800	0.0065	Capacity not reserved and not guaranteed.	2003-2005 USAs
6	14438 Old Bandera Rd 0.914	B&C Inc.	0,914	1,000	600,000	0.001	274,200	0.000	874,200	0.0009	Capacity not reserved and not guaranteed.	2003-2005 USAs
6	13438 Old Bandera Rd 0.35	Dore Young	0,350	1,000	600,000	0.001	108,000	0.000	708,000	0.0007	Capacity not reserved and not guaranteed.	2003-2005 USAs
6	13439 Bandera Rd 3.693	Just Borden, Inc	3,693	5,200	3,120,000	0.003	2,622,900	0.002	5,742,900	0.0053	Capacity not reserved and not guaranteed.	2003-2005 USAs
6	14107 Bandera Rd 4.136	Michael M. Young and Russell F. Young	4,136	1,000	600,000	0.001	1,240,800	0.001	1,840,800	0.0018	Capacity not reserved and not guaranteed.	2003-2005 USAs
6	Heides Elementary, 4.64 Acres	Northside Independent School District	4,640	8,340	5,004,000	0.005	1,392,800	0.001	6,396,800	0.0064	Capacity not reserved and not guaranteed.	2003-2005 USAs
6	14237 Old Bandera Rd. 0.698	Robert J. Mander, Jr.	0,698	1,000	600,000	0.001	209,400	0.000	809,400	0.0008	Capacity not reserved and not guaranteed.	2003-2005 USAs
			27,332	25,990	15,354,000	0.015	8,379,600	0.008	23,733,600	0.024		
TOTALS:				2,672,658	4,965,490	2,979,294,000	2,979	801,797,400	0.802	3,781,091,400	3.781	
							I & I (300) GPD/Ac.		Peak Wet Weather Flows with I&I (GPD)			

Iron Horse Lift Station Area Sewer Capacity Analysis Map

(Active USAs and Sewer Contracts)

Culebra Creek

Upper Leon Creek

SAWS Wastewater Master Planning
By Santa River, Planner III
February 12, 2008

2/11/08 WJW:R, JGR Iron Horse Capacity Analysis



City of Helotes
Preliminary Engineering Study
Proposed Water and Sanitary Sewer Lines

Project Limits:	Along North side of Bandera Road (SH16) from Scenic Loop Road to Cedar Trail (approx. 11,200 feet)		
Land Use:	Commercial/Retail		
Projected Time Frame:	3-10 years		
EDU:	4 EDU per acre		
Total Acreage:	~ 145.1 AC		
Total EDU:	~ 580.4 EDU		
Sewer Demand (ULT):	391,770 gallons per day @ peak flow		
Water Demand (ULT):	Avg. Daily Flow:	127.69 gpm	
	Peak Daily Flow:	255.38 gpm	
	Peak Hourly Flow:	870.60 gpm	
	Peak Hourly Flow + Fire Flow:	2,870.60 gpm	
SAWS Impact Fees: (Water and Sanitary Sewer)	\$5,500.00 per EDU ~ \$3,192,200.00		





HELOTES EDC - FEASIBILITY STUDY - PROPOSED SANITARY SEWER AND WATER LINES
PRELIMINARY ENGINEERING COST ESTIMATE
April 16, 2008

Description	Unit	Quantity	Unit Price	Extension
Sanitary Sewer Line				
8" SDR 26 PVC Gravity Sewer (0' - 6' Cut)	LF	7250	\$74.00	\$536,500.00
4" DI PVC Force Main (0' - 6' Cut)	LF	3700	\$50.00	\$185,000.00
Sanitary Sewer Manhole (0' - 6' depth)	EA	22	\$3,232.00	\$71,104.00
Sanitary Sewer Laterals	LF	1000	\$51.00	\$51,000.00
One Way Sanitary Sewer Cleanout	EA	40	\$240.00	\$9,600.00
Jacking, Boring or Tunneling (24")	LF	200	\$356.00	\$71,200.00
Jacking, Boring or Tunneling (36")	LF	200	\$369.00	\$73,800.00
Casing or Liner (24")	LF	190	\$110.00	\$20,900.00
Casing or Liner (36")	LF	190	\$120.00	\$22,800.00
Subtotal Sanitary Sewer Line				\$1,041,904.00
Lift Station	EA	1	\$150,000.00	\$150,000.00
Subtotal Lift Station				\$150,000.00
Water Line				
12" C900 PVC Water (0' - 6' Cut)	LF	9850	\$88.00	\$866,800.00
New 3/4" Short Service	EA	40	\$770.00	\$30,800.00
Fire Hydrant	EA	31	\$3,735.00	\$115,785.00
16" Water tie-ins	EA	2	\$4,425.00	\$8,850.00
24" Water tie-ins	EA	1	\$5,806.00	\$5,806.00
Pipe Fittings, all sizes and types	TON	19.5	\$2,520.00	\$49,140.00
Subtotal Water Line				\$1,077,181.00
Subtotal for Sanitary Sewer and Water				\$2,269,085.00
Construction Contingencies (20%)				\$453,817.00
Engineering (10%)				\$226,908.50
TOTAL ESTIMATED COSTS				\$2,949,810.50